CLAIMS

I claim:

1.   A method of controlling power of communications between a mobile station and a base station, the method comprising:

determining a location of the mobile station;

based on the location, selecting a power level for communication between the mobile station and the base station; and

causing communication between the mobile station and the base station at the selected power level.

2.   The method of claim 1, wherein selecting a power level for communication between the mobile station and the base station comprises:

referring to a database that correlates locations with power levels; and

selecting from the database a power level that is correlated with the location.

3.   The method of claim 2, wherein causing communication between the mobile station and the base station at the selected power level comprises:

sending to the mobile station an instruction to transmit at the selected power level, whereby the mobile station responsively transmits at the selected power level.

4.   The method of claim 2, wherein the selected power level is a Digital Gain Unit, and wherein causing communication between the mobile station and the base station at the selected power level comprises:

translating the Digital Gain Unit into a corresponding base station transmit power; and

transmitting from the base station to the mobile station at the base station transmit power.

5.   The method of claim 2, wherein the selected power level is a base station transmit power level, and wherein causing communication between the mobile station and the base station at the selected power level comprises:

setting the base station to transmit at the base station transmit power level,

whereby the base station responsively transmits at the base station transmit power level.

6.   A base station programmed to perform the functions of claim 1.

7.   A method of controlling power of communications between a mobile station and a base station, the method comprising:

determining a location of the mobile station;

based on the location, selecting a reverse link setpoint;

using the reverse link setpoint as a basis to manage mobile station transmit power.

8.   The method of claim 7, wherein selecting a reverse link setpoint comprises:

referring to a database that correlates locations with reverse link setpoints; and

selecting from the database a reverse link setpoint that is correlated with the location.

9.   The method of claim 7, wherein using the reverse link setpoint as a basis to mobile station transmit power comprises:

measuring an energy level, E_b, of a signal received from the mobile station;

based on the energy level and an estimate of air interface noise, N_o, computing a measured value of E_b/N_o;

comparing the measured value of E_b/N_o with the reverse link setpoint; and

if the measured value of E_b/N_o does not match the reverse link setpoint, sending to the mobile station an instruction to adjust transmit power.

10.   The method of claim 7, further comprising:

receiving a signal at the base station from the mobile station;

measuring a frame error rate of the signal;

comparing the measured frame error rate to a threshold frame error rate;

if the measured frame error rate does not match the threshold frame error rate, adjusting the reverse link setpoint;

using the adjusted reverse link setpoint as a basis to manage mobile station transmit power.

11.   The method of claim 10, further comprising:

based on the location, selecting a bounding value for a reverse link setpoint;

using the bounding value as a basis to limit the reverse link setpoint.

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12.   The method of claim 10, wherein selecting a bounding value for a reverse link setpoint comprises:

referring to a database that correlates locations with bounding values of reverse link setpoints; and

5   selecting from the database a reverse link setpoint that is correlated with the location.

13.   A base station programmed to perform the functions of claim 7.

14.   A location-based power control method for communications between a mobile

10   station and a base station, the method comprising:

(a) determining a location of the mobile station; and

(b) based on the location, selecting from a database values of initial mobile station transmit power, reverse link setpoint, and initial base station transmit power,

(c) instructing the mobile station to transmit at the initial mobile station transmit power;

15   (d) transmitting to the mobile station at the initial base station transmit power;

(e) performing a first process comprising (i) establishing a measured value of E_b/N_o and (ii) if the measured value of E_b/N_o does not match the reverse link setpoint, instructing the mobile station to adjust transmit power;

(f) performing a second process comprising (i) establishing a measured value of reverse

20   link frame-error-rate and (ii) if the measured value of reverse link frame-error-rate does not match a threshold value of reverse link frame-error-rate, adjusting the reverse link setpoint; and

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(g) performing a third process comprising (i) receiving a measured value of forward link frame-error-rate and (ii) if the received value of forward link frame-error-rate does not match a threshold value of forward link frame-error-rate, adjusting the forward link transmit power.

5   15.   A base station programmed to perform the functions of claim 14.

16.   A method of controlling power of communications between a mobile station and a base station, the method comprising the following steps:

(a) determining a location of the mobile station;

10   (b) based on the location, selecting a setpoint and a mobile station transmit power;

(c) instructing the mobile station to transmit at the mobile station transmit power;

(d) computing an energy-to-noise measure for a signal received from the mobile station;

(e) determining if the energy-to-noise measure matches the setpoint; and

(f) in response to a determination that the energy-to-noise measure does not match the initial setpoint, instructing the mobile station to adjust the mobile station transmit power.

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17.   The method of claim 16, further comprising:

(g) monitoring an error rate of signals received from the mobile station;

(h) determining if the error rate matches a predetermined threshold;

20   (i) in response to a determination that the error rate does not match the predetermined threshold, adjusting the setpoint.

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18.   The method of claim 17, further comprising:

periodically repeating steps (d)-(f) and (g)-(i).

19   The method of claim 18 further comprising:

detecting a new location of the mobile station; and

repeating steps (b)-(f) based on the new location.

20.   A base station programmed to perform the functions of claim 16.

21.   A method of controlling power of communications between a mobile station and a base station, the method comprising the following steps:

determining a location of the mobile station;

based on the location, selecting a base station transmit power level;

transmitting from the base station at the base station transmit power level;

monitoring an error rate of signals received by the mobile station;

determining if the error rate matches a predetermined threshold;

in response to a determination that the error rate does not match the predetermined threshold, adjusting the base station transmit power level.

22.   The method of claim 21, wherein selecting a base station transmit power level comprises selecting a Digital Gain Unit and translating the Digital Gain Unit into a base station transmit power level.

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23.   A power control system comprising:

means for determining a location of the mobile station;

means for selecting a power level for communication between the mobile station and the

base station, based on the location; and

5   means for causing communication between the mobile station and the base station at the

selected power level.